

CIA/PB 131632-44

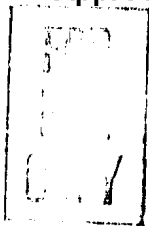
DECEMBER 12 1958

UNCLASSIFIED-

Approved For Release 1999/09/08 : CIA-RDP62-00141R000200450001-3

SOVIET BLOC INTERNATIONAL
GEOPHYSICAL YEAR INFORMATION

1 OF 1



45

PB 131632-44

SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

December 12, 1958

U. S. DEPARTMENT OF COMMERCE
Office of Technical Services
Washington 25, D. C.

Published Weekly from February 14, 1958, to January 2, 1959
Subscription Price \$10.00 for the Series

NOTICE TO SUBSCRIBERS

Soviet Bloc International Geophysical Year Information will continue publication throughout 1959.

Your current subscription expires January 2, 1959.

If you wish to receive this weekly publication through 1959, please address an order to OTS, U. S. Department of Commerce, Washington 25, D. C., and enclose a check or money order for \$12.

PLEASE NOTE

This report presents unevaluated information on Soviet Bloc International Geophysical Year activities selected from foreign-language publications as indicated in parentheses. It is published as an aid to United States Government research.

SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

Table of Contents

	<u>Page</u>
I. Rockets and Artificial Earth Satellites	1
II. Upper Atmosphere	3
III. Gravimetry	5
IV. Glaciology	8
V. Oceanography	9
VI. Arctic and Antarctic	10

I. ROCKETS AND ARTIFICIAL EARTH SATELLITES

Early December End of Sputnik III Carrier-Rocket Predicted by Soviets

The carrier-rocket of Sputnik III is expected, on the basis of observational data and theoretical calculations, to enter the dense layers of the Earth's atmosphere in the first days of December and so end its existence.

At 1800 on 27 November, Sputnik III will have completed 2,694 revolutions of the Earth and its carrier-rocket 2,800. Sputnik III's orbital period is equal to 102.8 minutes and its apogee is 1,575 kilometers. The parameters of the carrier-rocket underwent more substantial changes. At present, its orbital period is equal to 91.25 minutes and is continuing to decrease, rapidly nearing a critical value. The daily change in the orbital period consists of 15 seconds and will increase intensely in the future. Its maximum apogee has decreased by 1,400 kilometers and is now 480 kilometers.

(The balance of this Pravda article considers some problems relating to the lifetime of artificial earth satellites.)

The principal factor limiting a satellite's lifetime is the resistance of the atmosphere. Under the effect of this resistance, the satellite's orbital period gradually decreases until it reaches its most critical value, approximately 87.75 minutes.

It can thus be seen that the lifetime of artificial earth satellites is determined by two basic factors: the magnitude of atmospheric resistance and the initial value of the orbital period. The smaller the resistance and the greater the initial value of orbital period, the longer the satellite's lifetime.

The resistance of the atmosphere to the motion of an artificial earth satellite depends on the altitude of the perigee of the orbit and the satellite's aerodynamic and ballistic properties, a primary role in which is played by so-called transverse or cross-sectional loading. The lifetime of a satellite can be considerably altered by changing the perigee altitude and the transverse loading. Thus, an artificial earth satellite with a near circular orbit and a perigee of about 1,000 kilometers would have an almost unlimited

CPYRGHT

lifetime. With a perigee of 500 kilometers, its lifetime in relation to the value of transverse loading would be from 2 up to 7 years, and with a perigee of 150-160 kilometers, a satellite could complete only about one revolution of the Earth.

Transverse loading has a less substantial effect on the period of existence; if we decrease the ratio of the satellite's weight to its cross sectional area by a factor of 10, its longevity also will decrease by about the same factor.

The reasons presented above also determined the different nature of the decrease in the orbital periods and lifetimes of Sputniks I, II, and III. Thus the first Soviet satellite and its carrier-rocket, on entering into orbit had the same perigee altitude and identical periods of rotation, 96.2 minutes. However, because of the different values of transverse loading in the satellite and the carrier-rocket, the daily decrease of their orbital periods was dissimilar and was correspondingly 1.6 and 2.7 seconds. That is why Sputnik I lasted 94 days and its carrier-rocket, 60.

Sputnik II, which was a combination of both satellite and carrier-rocket was very similar in regard to ballistic and aerodynamic qualities to Sputnik I's carrier-rocket and, with approximately the same perigee altitude, had a lifetime of 163 days. Sputnik II's greater lifetime can be explained by the greater value of its initial orbital period. Sputnik II orbital period was 103.7 minutes, i.e., 7 1/2 minutes more than Sputnik I's carrier-rocket.

It is natural that with an almost identical daily decrease in the orbital period, Sputnik II should arrive at the critical value of its orbital period later than Sputnik I's carrier-rocket. Sputnik III was placed in orbit with approximately the same initial perigee altitude as the first two Soviet satellites, but with a greater initial orbital period, 105.95 minutes. Already, one of these circumstances is responsible for the greater lifetime of Sputnik III and its carrier-rocket, in comparison to its predecessors. ("The Motion of Sputnik III"; Moscow, Pravda, 27 Nov 58, p 4)

II. UPPER ATMOSPHERE

Storms and Winds on Mars Reported by Soviet Observatory

Interesting results from observations of the planet Mars while in opposition on 16 November were reported by Prof V. Sharonov, director of the observatory at Leningrad University.

At the time of the observations, the dark areas of Mars, which usually are sharply defined against the reddish background of the "deserts," were barely distinguishable through a yellowish haze. This was evidence of strong winds on the planet, which were lifting dust and sand from its surface.

Professor Sharonov said that this particular storm began in September 1956 and that it can be definitively stated that after some interruptions it still continues today.

When asked the reasons for this condition, which had not been previously observed, excepting during the opposition of 1956, Sharonov proposed that the abundance of spots on the Sun and other processes developing on its surface affect the atmosphere on Mars (as well as the Earth's). A definite answer to this problem is still not possible. The reasons for this interesting phenomenon must be made the object of an all-around study by astronomers. ("Storms and Winds on Mars"; Moscow, Izvestiya, 25 Nov 58, p 4)

Brightness of Emission Lines in the Spectra of Zodiacal Light

The results of observations of the spectra of zodiacal light which were conducted for confirming the effect of the intensification of the brightness of emission lines are given. These observations were conducted in March 1956 in the Astrophysical Observatory of the Academy of Sciences Kazakh SSR using a Leontov-design nebular spectro-scope (lens power 1:1, and a dispersion of 335 A/mm in the $\lambda = 5577$ region). Spectrograms were obtained on type DK and RF-3 film. Exposures were made from 2100 to 0300 hours (the length of exposure one night lasted from 1 1/2 to 2 hours) with a 2-millimeter slit width. Spectra of zodiacal light and of the sky were simultaneously photographed. Prisms with full internal reflection placed on horizontal slits were used for this purpose.

On the basis of 4 days' observations, it was found that the intensification of $\lambda = 5577$ lines in the spectrum of zodiacal light consists of an average of 15 percent in comparison with a point in the sky located 20 degrees to the south of the axis of the zodiacal light. ("The Intensification of Emission Lines of Night Sky Illumination in Zodiacal Light," by M. G. Karimov; Izvestiya Astrofizicheskogo Instituta Akademii Nauk Kazakh SSR, Vol 5, No 7, 1957, pp 120-122, from Referativnyy Zhurnal-Astronomiya, Geodeziya, No 3, Mar 58, Abstract No 1888)

Scattering Functions in Airglow

The possibilities of determining atmospheric indicatrices of scattering for a given brightness of the sky and the effect of repeated scattering on the results of brightness measurements are explained in an article by Ye. M. Feygel'son, Institute of the Physics of the Atmosphere Academy of Sciences USSR.

The following problems of the theory of interpreting measurements of brightness are conducted: how it is possible to obtain information on the function of scattering by means of measuring the brightness of the night sky within the limits of the theory of repeated scattering; in what degree it is possible to disregard repeated scattering; and with what accuracy can the correction for repeated scattering be evaluated by the Ye. V. Pyaskovskaya-Fesenkova method. ("Interpretation of Observations of the Night Sky," by Ye. M. Feygel'son, Institute of the Physics of the Atmosphere, Academy of Sciences USSR; Moscow, Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, No 10, Oct 58, pp 1222-1233)

Study on Daily Variation and Total of Scattering and Gross Radiation

The investigation of the daily variation of scattering and the total radiation on variously oriented slopes based on pyranometric measurements taken on cloudless days is described in a Soviet scientific periodical.

The measurements were conducted on an open horizontal area of the Karadag actinometric observatory (Crimea) in summer 1956 for surfaces inclined at angles of 5, 10, 15, 20, 30, 50, 70, and 90 degrees, oriented to the south, north, east and west.

Three methods of determining the daily sum of total radiation on the sloping surfaces were developed. ("Diurnal Variation and Daily Total of Scattering and Total Radiation on Differently Oriented Slopes," by K. Ya. Kondrat'yev and M. P. Manolova; Leningrad, Vestnik Leningradskogo Universiteta, No 4, Seriya Fiziki i Khimii, No 1, 1958, pp 5-16)

Hydrogen Emission in Auroral Spectra

The initial investigations of the aurorae spectrum (in the visible region) in the Murmansk Branch of the Scientific Research Institute of Terrestrial Magnetism, the Ionosphere, and Radio Wave Propagation (NIZMIR) are described. A diffraction spectrograph (F: 1.2; dispersion of 330 Å/mm) was used. In a number of spectrograms hydrogen H alpha lines were noted which were displaced or not displaced because of the Doppler effect, depending on the orientation of the instrument relative to the Earth's magnetic field. The maximum velocity of the hydrogen atoms obtained according to Doppler shifting comes up to 3,000 km/sec, which agrees with Meynel [transliterated from the Russian] and Gartlein data. The H alpha line is recorded in photographing diffusion arcs, diffusion bands, and diffusion luminescence. In radiant forms of H alpha luminescence, it is possible that the positive system of nitrogen is highly concealed. In this case, it is impossible to say whether there is any hydrogen emission in these forms. It is proposed that the incoming of hydrogen atoms occurs constantly, but during the luminescent forms (discharge) H alpha is blended. Spectrograms are given in which the hydrogen emission and the positive nitrogen system blending the H α can be seen. ("Hydrogen Emission in the Spectrum of Aurorae," by S. I. Isayev, Fizika Solnechnykh Korpuskulyarnykh Potokov i Ikh Vozdeystviye na Verkhnyuyu Atmosferu Zemli [Physics of Solar Corpuscular Flows and Their Effect on the Upper Atmosphere of the Earth], Moscow, Akademi Nauk SSSR, 1957, pp 178-179; from Referativnyy Zhurnal -- Astronomiya, Geodeziya, No 3, Mar 58, Abstract No 1890, by V. F. Yesipov).

III. GRAVIMETRY

Problems on Reductions of Gravity

The problem of reductions of gravity was encountered by E. B. Adzhimamudov in the compilation of gravitational maps for the territory of Armenia. Two particular points of this problem, the use of statistical reduction and the use of differential density in the introduction of Bouguer corrections, are considered.

Glenn's reduction, which introduces topographic reductions for nearby zones and isostatic reductions for the remainder, is discarded in favor of a more simplified reduction proposed by Ye. N. Lyustikh in the following order:

1. Local topographic reduction
2. Statistical reduction
3. Bouguer's reduction (less corrections for relief).

Proceeding on these, maps of gravitational anomalies in Bouguer's reduction (for an average density of the intermediate layer of $\sigma = 2.67$) and in the statistical reduction were compiled by the author.

Corrections for the local relief for four points located in different relief conditions were calculated for explaining the possible magnitude of the influence of the relief on the gravitational field and also for verification of the expediency of using the statistical reduction.

A table is given showing comparative values of Bouguer anomalies for the local relief, Bouguer anomalies with corrections for local relief, and statistical anomalies.

According to this table, the usual Bouguer anomalies differ much less from Bouguer anomalies with corrections for local relief than from the statistical (with the exception of one point -- 4). The magnitude of this divergence depends on the conditions of the relief and not on the altitude of the points.

This fact was also confirmed by B. K. Balavadze (B. K. Balavadze, Gravitatsionnoye Pole i Stroyeniye Zemnoy Kory-Gruzii, [The Gravitational Field and the Structure of the Earth's Crust in Georgia], Izd. AN Gruz SSR, Tbilisi, 1957)

An objection to the use of Bouguer anomalies is based on the argument that the effect of rock lying above sea level is disregarded and that the introduction of Bouguer corrections in values of certain anomalies injects an arbitrary element, since the average density of the rock in the intermediate layer is not known with sufficient accuracy. However, in Bouguer corrections, not all of the mass lying above sea level is eliminated, but only the "normal" mass; and the effects of the

anomalous masses are retained. Thus, the objections set forth for the usual Bouguer reductions introduced for one and the same average density of the intermediate layer are incorrect. These objections are related to the method of calculating Bouguer anomalies in which the actual density of the intermediate layer is taken for each point. This method assumes a knowledge of the density of the geological profile of the Earth's surface down to sea level for all of the region being studied, which, in many, cases is the particular aim of the investigation.

In case the actual density of the intermediate layer were successfully taken into consideration, an anomaly would be obtained which would reflect the distribution of masses located only below sea level. Thus, certain geological structures would show the surface of the level of the sea divided into two parts, and there would be only a partial representation on a gravitational map. Consequently, the introduction of the actual density cannot be justified from this viewpoint. ("Problem on Reductions of Gravity," by E. B. Adzhimamudov, Institute of Geological Sciences, Academy of Sciences Armenian SSR; Yerevan, Izvestiya Akademii Nauk Armyanskoy SSR, Seriya Geologicheskikh i Geograficheskikh Nauk, Vol 11, No 4, 1958, pp 73-75)

IV. GLACIOLOGY

Glaciological Work on the Fedchenko Glacier

The text of a brief item on IGY glaciological work by the Uzbek Academy of Sciences follows:

"The IGY program of the Academy of Sciences Uzbek SSR provides for investigations on the Fedchenko Glacier.

"The staff of an expedition, organized in 1957, includes scientists and technical workers of the Institute of Mathematics and Mechanics imeni V. I. Romanovskiy, associates of Leningrad and Moscow universities, of the Institute of Geography of the Academy of Sciences USSR, and Chinese and Polish scientists.

"Under exceptionally unfavorable meteorological and glacial conditions, the members of the expedition traveled the difficult accessible valleys of the Tanyas and Sel'dary rivers to the Fedchenko Glacier, where, in a short time, they set up two new scientific stations to augment the already existing hydrometeorological observatory in the central part of the glacier. One of these stations was established in the firn region of the glacier, at an altitude of 4,900 meters, and is the highest winter station in the USSR. Another station is located at the end of the glacier, at an altitude of 3,000 meters. These two stations cover a network of synoptical points and have been named Vitkovskiy Glacier (upper station) and Fedchenko Glacier 2 (lower station).

"At work in the new stations at present is a collective of associates of the Institute of Mathematics and Mechanics under the direction of geographer V. K. Nozdryukhin (chief of the upper winter station) and engineer-hydrologist L. P. Tribunskiy (chief of the lower winter station).

"Besides the organization of the winter stations on the glacier, episodic work is also being carried out. Traveling teams have explored the lower and upper areas of the Fedchenko Glacier and its larger tributaries, the Kashal-Ayan, the Bibachnyy, the Malyy Tanyas, and Lednik (glacier) No 5. Seven transverse lines of direction were extended to determine the rate of movement of the ice. The first work to be done was a drilling through the ice to determine its thickness and structural peculiarities and the temperature pattern of its subsurface layers.

"Teams of scientists from Leningrad University conducted meteorological, actinometric, and hydrological observations both on the glacier itself and in the regions surrounding it.

CPYRGHT

Approved For Release 1999/09/08 : CIA-RDP82-00141R000200450001-3

CPYRGHT

"The work already started is being continued by the winter stations in connection with the IGY program.

CPYRGHT

"During the entire wintering-over period, regular radio communications are being maintained. Meteorological data from the winter stations is being transmitted four times a day into the general synoptical network." ("Glaciological Work on the Fedchenko Glacier," by B. G. Alejev; Moscow, Vestnik Akademii Nauk SSSR, No 10, Oct 58, p 57)

V. OCEANOGRAPHY

Soviet Submarine-Laboratory Ready for Maiden Voyage

Work on fitting out the Soviet submarine which is to be used as a scientific laboratory by the All-Union Scientific Research Institute of the Fish Economy and Oceanography (VNIRO) has been completed at one of the country's shipyards.

The craft's first long scientific voyage is planned for December.

A Pravda interview with V. P. Zaytsev, director of the institute gives the following information.

Zaytsev says, that for the first time in the world, a submarine will be used for studying sea and ocean waters, the sea bottom, and sea fauna and flora. The ship is equipped for extensive scientific investigations. Three large portholes are located in the bow giving a view in three different directions. Other portholes will accommodate photographic apparatus, motion picture cameras, and a television camera. Powerful searchlights will make night observations possible.

The laboratory is equipped with a large number of the latest instruments. These are located both inside and outside the ship. Scientific work in the seas and oceans which has been conducted up to now only by surface research ships will be supplemented and in many cases improved with the use of the new craft.

The greatest use of the ship will be made in the interests of the fishing industry. ("Submarine -- Scientific Laboratory"; Moscow, Pravda, 24 Nov 58, p 4)

Soviet Antarctic Expedition Gets New Vehicles

The new oversnow vehicles manufactured for the Antarctic by enterprises of the Khar'kov Sovnarkhoz are considerably different from those formerly used by expeditions in this region. They have one-meter wide caterpillar tracks and their length has been increased; 500-horsepower motors have been installed in the vehicles. The motors are equipped with superchargers to enable the vehicles to operate at elevations of 4,000 meters above sea level. The vehicles are painted a bright orange color and have black stripes with white edges along the sides.

The body of the vehicle is made of duralumin. It has ten side lights, and three oval-shaped doors. The outer walls, doors, floor, roof, and hatch roofs are covered with insulating material, with a special covering on top of it.

The vehicles are designed for living comfort. The entrance into the body is from the rear of the vehicle by a special ramp, which can be raised or lowered. There are two doors into the inner compartment, to keep out the cold air. There is enough space in the inside lobby to remove one's outer clothing and footwear, and shake off the snow. A passage leads past the drying compartment with an electric heater and hangers, and toilet and washroom with hot and cold water, a kitchen with an electric range, and into the main cabin. The latter contains a dining-table, chairs, and upholstered sofa, work space for the scientists, and, behind a heavy curtain, beds with soft mattresses made of plastic material. There is also a radio cabin, and a compartment for the driver and navigator. The four front and two side windows in this compartment do not freeze in any kind of weather. At the rear wall is a sofa, which can be easily made into two beds. ("Across the South Pole," Moscow, Sovetskaya Rossiya, 14 Sep 58)

Development of Glaciation in the Antarctic

The first party of the Soviet Complex Antarctic Expedition, which wintered in the Antarctic during 1956-1957, undertook measurements of the thickness of the ice sheet on the continent and the adjoining islands of Drygalski, Mill, and Bowman. The measurements were made with the help of a portable 12-channel seismic station of the Swedish firm ABEM, according to the method of registering initial reflected waves. The average speed of propagation of longitudinal waves was considered to equal 3,750 meters per second. This speed was obtained in "core sampling" an 86-meter drill hole and was calculated by the hodograph of the reflected wave, obtained for an uninterrupted profile with a length of 1,750 meters.

Measurements of the ice thickness of the antarctic ice sheet along the Mirnyy-Pionerskaya profile enabled scientists to construct a cross section extending over 100 kilometers. [Diagram of cross section shown in original article.] The cross section shows clearly that the glacier thickness, which is 154 meters at the edge of the glacier in the Mirnyy area, increases in the direction of Pionerskaya and reaches 1,650 meters at the 100th kilometer, i.e., a tenfold increase. The subglacial bed along the whole length of the profile, except the point at the 75th kilometer, is below sea level. The average depth of the bed in relation to the sea level is 225 meters.

The glacier surface along the whole length of the indicated profile rises toward the south, reaching 1,405 meters above sea level at the 100th kilometer. The nature of the surface along the described profile varies. The marginal portion of the glacier from Mirnyy to the 20th kilometer is covered by a dense network of "movement crevasses." These crevasses, which are perpendicular to the main direction of the glacier movement, bear witness to the great speed of this movement. Toward the south, such indications of fast movement disappear. After the 20th kilometer, no more crevasses are observed on the surface.

The snow-measuring observations, conducted by L. D. Dolgushin and Yu. M. Model', expedition members, proved that the annual amount of precipitation falling on the glacier surface and forming a layer of snow accumulation decreases gradually toward the south. The maximum accumulation of precipitation which has fallen or has been carried over by snowdrifts is formed in the area between the 4th and 20th kilometer. Here the average amount of accumulated snow reaches 166 centimeters during the winter period, while in the area between the 75th and 100th kilometer, only 40-50 centimeters of snow accumulate, with an average density of 0.42 grams per cubic centimeter. Thus, the thickness of snow deposits decreases to about one third or one fourth over a 100-kilometer distance from the coast into the interior, but the amount of deposited snow is clearly in contrast to the thickness of the glacier on this profile. There is no ablation of snow by melting in this area. Even at the peak of the summer period the temperature rarely rises above freezing point, and the water forming in such cases only appears in the form of interlayers of infiltrated ice in the snow.

The heat balance in this area is sharply negative, and only in a narrow 2-kilometer coastal zone melting plays a more important part in glacier ablation.

The contrast between snow accumulation and the thickness of the glacier may be explained as follows. The speed of glacier movement near the edge is much greater than in the interior regions, and the speed in the marginal parts must be so great that it causes the removal not only of all the fallen snow, but also of the ice masses moving out of the interior regions. The ice approaches the edge of the glacier, where it breaks off in the form of icebergs and is carried out into the open sea. If the speed of movement were uniform along the whole profile, the difference in accumulation would lead to an increase in ice-thickness in the marginal parts.

It was formerly assumed that the average elevation of the subglacial bed of Antarctica equaled 600-700 meters, this being the average elevation of the surface of the remaining continents of our planet. At present, on the basis of measurements made by the Soviet, Norwegian-Swedish-British, and US expeditions, one may assume that the central glacier area of Antarctica has an enormous ice thickness, reaching 3,000-4,000 meters, and that the subglacial bed of the central parts of East Antarctica is at the level or even below the level of the world ocean. Based on these assumptions, it is possible to estimate the ice reserves in Antarctica, assuming the average thickness of the ice to be 2,200-2,500 meters and the whole glacier area to cover 13 million square kilometers. This would result in a volume of 28-32 million cubic kilometers. The melting of this quantity of ice would result in a rising of the world ocean surface by 71-80 meters.

In connection with the above statements, the ice measurements made on the islands of Drygalski, Mill, and Bowman, are of special interest. Drygalski Island represents a huge cupola-shaped ice block, 20 kilometers long, 10 kilometers wide, and with a maximum thickness of 430 meters, lying on a flat submarine shelf, which is the most shallow part of the Davis Bank. The cross section of this island resembles the cross section of Antarctica in its general features. The island has the same cupola-shaped form, with the ice thickness decreasing toward the edges. Here one may also observe a series of concentric crevasses near the island shores, which proves that the ice moves with greater speed as it approaches the edges. The amount of precipitation falling on the island is apparently uniform throughout its area. During the winter of 1956, a 120-centimeter layer of fallen snow was measured on Drygalski Island. There were no signs of intense melting on the surface.

The "feeding" of the island glacier by precipitation occurs in a very unique manner. The moist sea air, coming into direct contact with the cold surface of the island, causes intense formation of hoar frost. During the night of 2 to 3 December 1956, the scientists observed an extremely rapid formation of a thick layer of hoar frost on the surface of Drygalski Island and on the wings of the airplane. The frost layer

which formed during a 2-3 hour period, reached a thickness of 3-4 millimeters. It should be noted that open sea areas, or more correctly huge polynia, are preserved in the vicinity of Drygalski Island all the year round, thereby providing for year-round "feeding."

A similar situation is observed on Mill Island and Bowman Island, although these two islands are located in somewhat different conditions than Drygalski Island. They partially adjoin the Shackleton Ice Shelf, and only one half of the coastline of these islands borders on the open sea. As a result, the slope facing the sea receives a larger amount of precipitation than the opposite slope. Also, the ice movement on the sea slope is more active than on the other side.

The conditions on these islands, the snow accumulation and ablation, indicate that it is possible for independent glaciation nuclei to develop in antarctic waters. A factor which might cause the formation of such ice islands could be the settling of a large iceberg on a bank, or the preservation of some portion of a broken-up shelf glacier, which has moved down to a bank in the process of its growth, or some other process leading to the formation of an ice nucleus of a future island in the open sea.

It would be incorrect to say that the formation of similar islands is not connected with the existence of Antarctica. Only the presence of the huge antarctic glacier could create favorable conditions for the formation of these cupola-shaped islands. Their existence and development, observed at this time, are proof of the fact that present conditions in Antarctica are favorable to the development of glaciation. A reduction and disappearance of these islands will be the first sign that the glacier edge of Antarctica is retreating and disappearing. Insofar as these islands represent small replicas (working models) of Antarctica, they will react faster to factors favoring the reduction of glaciation in the Southern Hemisphere than the glacier of the continent.

Therefore, it is necessary to conduct stationary research which would make it possible to determine the exact dimensions, conditions of precipitation accumulation, and ice balance on the cupola-islands at present. Repeated measurements during the next IGY, conducted on these islands, will make it possible to obtain more exact information on the trend in glaciation development in the Southern Hemisphere. ("On the Question Regarding the Tendency of Glaciation Development of the Antarctic Continent," by A. P. Kapitsa, Moscow, University, Geographical Faculty, Chair of Geomorphology; Moscow, Nauchnyye Doklady Vysshey Shkoly, Geologo-Geograficheskkiye Nauki, No 1, 1958, pp 48-52)

The method and the results of the investigation of the elastic properties of Arctic sea ice are described. The investigation was made by means of seismic methods on the ice in the region of Cape Schmidt. The observations covered the period from the middle of May to the end of June 1957.

The object of the study was the one-year ice of autumnal formation. The seismic observations were conducted along with investigations of the physical-mechanical properties of the ice (structure, thermics, etc.). by the Arctic Institute (I. S. Peschanskiy laboratory) in participation of the Chair of Physics of the Earth's Crust, Leningrad University.

Explosions and mechanical strike were used to stimulate seismic waves in the ice. Elastic waves were recorded by means of an 8-channel electronic oscillograph and the seismic station, which consisted of a Type MPO-2 train oscillograph, and of transistor amplifiers. Local and average values of Young's modulus for Arctic ice and the temperature relationships of the elastic modulus, under natural conditions were obtained. ("Study of the Elastic Properties of Ice Cover in the Arctic," by Ye. M. Lin'kov; Leningrad, Vestnik Leningradskogo Universiteta, No 4, Seriya Fiziki i Khimii, No 1, 1958, pp 17-22)

Fourth Soviet Expedition Departs for Antarctica

The newspaper Izvestiya reports the departure of the diesel-electric ship Ob' from Kaliningrad on 21 November. The ship had taken on scientific equipment and supplies for the wintering workers in Antarctica. Members of the Fourth Complex Antarctic Expedition were on board. ("From Everywhere About Everything"; Moscow, Izvestiya, 20 and 25 Nov 58)

* * *